AMENDMENTS TO THE CLAIMS

1. (currently amended) An apparatus for acquiring seismic data used in characterizing a subsurface formation, comprising:

a) a sensor unit configured to be coupled to an earth's surface to sense ~~for sensing~~ seismic energy, the sensor unit configured to sense ~~sensing~~ seismic energy imparted into the subsurface formation and to provide ~~providing~~ a signal indicative of seismic energy reflected from the subsurface formation and suitable for imaging the subsurface formation;

b) an acquisition device co-located with the sensor unit and coupled thereto configured to receive ~~for receiving~~ the signal;

c) a location sensor associated with the sensor unit ~~acquisition device~~ and residing in the acquisition device;

d) a memory unit having a first memory disposed in the acquisition device configured to store ~~for storing~~ in digital form information indicative of the received signal;

e) a second memory configured to store ~~for storing~~ a location parameter associated with the sensor unit; and

f) a communication device configured to provide ~~for providing~~ direct wireless bi-directional communication between the acquisition device and a remotely-located central controller.

2. (currently amended) An apparatus according to claim 1, wherein the sensor unit, the location sensor and the acquisition device are co-located, and wherein the location sensor and the acquisition device are in a ~~common~~ housing and the sensor unit is separate from the ~~common~~ housing.

3. (currently amended) An apparatus according to claim 1, wherein the sensor unit ~~is in a first housing~~ and the acquisition device ~~is in a second housing separate from the first housing, and the first housing and the second housing~~ are coupled together with a cable.

4. (original) An apparatus according to claim 1, wherein the sensor unit includes one of a velocity sensor and a pressure sensor.

5. (original) An apparatus according to claim 1, wherein the sensor unit includes an accelerometer.

6. (original) An apparatus according to claim 1, wherein the sensor unit further comprises a multi-component sensor.

7. (original) An apparatus according to claim 1, wherein the sensor unit further comprises a multi-component accelerometer having a digital output signal.

8. (original) An apparatus according to claim 1 further comprising an analog-to-digital converter disposed in the sensor unit, the signal provided by the sensor unit including a digital signal.

9. (currently amended) An apparatus according to claim 1, wherein the signal is an analog signal, the apparatus further comprising an analog-to-digital converter disposed in the acquisition device configured to convert ~~for converting~~ the signal to digital data.

10. (original) An apparatus according to claim 1, wherein the first memory further comprises a nonvolatile memory.

11. (original) An apparatus according to claim 1, wherein the first memory further comprises a removable memory.

12. (original) An apparatus according to claim 1, wherein the first memory further comprises one or more of a miniature hard disk drive and a nonvolatile removable memory card.

13. (currently amended) An apparatus according to claim 1, wherein the memory unit includes an inductive coupling device configured to transfer ~~for transferring~~ the information stored in the memory unit to an external device.

14. (currently amended) An apparatus according to claim 1, wherein the memory unit includes an optical coupling device configured to transfer ~~for transferring~~ the information stored in the memory unit to an external device.

15. (currently amended) An apparatus according to claim 1, wherein the sensor unit is configured to be coupled to the acquisition device using a sensor connector, the memory unit also configured to be ~~being~~ coupled to the sensor connector to enable ~~for enabling~~ retrieval of the information stored in the memory unit using the sensor connector.

16. (currently amended) An apparatus according to claim 1, wherein communication with the remotely-located central controller provides wireless command and control for the apparatus, the remotely-located central controller configured to be ~~being~~ programmed to control seismic data acquisition to image ~~for imaging~~ a subsurface formation.

17. (currently amended) An apparatus according to claim 1 further comprising a processor associated with the acquisition unit and the communication device, the processor configured to process ~~processing~~ programmed instructions enabling a software-defined radio transceiver.

18. (currently amended) An apparatus according to claim 1, wherein the communication device includes a direct conversion radio transceiver configured to provide ~~for~~ wireless communication between the apparatus and the remotely-located central controller.

19. (currently amended) An apparatus according to claim 1 further comprising a processor in the acquisition unit configured to provide ~~for providing~~ one or more of local control, time keeping, and power management.

20. (currently amended) An apparatus according to claim 1 further comprising a power source disposed in the acquisition device configured to provide ~~for providing~~ electrical power to one or more of the acquisition device, the sensor unit and the communication device.

21. (original) An apparatus according to claim 20, wherein the power source is removable.

22. (original) An apparatus according to claim 20, wherein the power source includes a rechargeable battery.

23. (currently amended) An apparatus according to claim 22 further comprising an inductive coupling in the acquisition device, the inductive coupling configured to be ~~being~~ operably coupled to the rechargeable battery to allow charging of the rechargeable battery by a second power source external to the acquisition device.

24. (currently amended) An apparatus according to claim 22 further comprising a connector disposed in the data acquisition device, the connector configured to be ~~being~~ operably coupled to the rechargeable battery to allow charging of the rechargeable battery by a second power source external to the acquisition device.

25. (original) An apparatus according to claim 22, wherein the rechargeable battery comprises one or more of a nickel-metal hydride battery, a lithium-ion battery, and a lithium-polymer battery.

26. (currently amended) An apparatus according to claim 1, wherein the location sensor comprises a GPS receiver configured to determine ~~for determining~~ the location parameter.

Claims 27-60 are cancelled.

61. (currently amended) A system for seismic surveying to characterize a subsurface formation, comprising:

a) a central controller;

b) an array configured to acquire ~~for acquiring~~ seismic data relating to a subsurface formation and configured to be ~~being~~ controlled by the central controller; the array including at least one acquisition device comprising:

(i) a sensor unit remotely located from the central controller, the sensor unit coupled to the earth configured to sense ~~for sensing~~ seismic energy in the earth and to provide ~~for providing~~ a signal indicative of the seismic energy reflected from the subsurface formation;

(ii) a recorder device co-located with the sensor unit and coupled thereto and configured to receive ~~for receiving~~ the signal and to store ~~for storing~~ in digital form information indicative of the received signal in a first memory disposed in the recorder device;

(iii) an acquisition device processor in communication with the sensor unit and the recorder device;

(iv) a location sensor configured to communicate ~~communicating~~ with only the processor, wherein the processor, the sensor unit, the recorder device and the location sensor form a single sensor station;

(v) ~~a second memory for storing a location parameter associated with the sensor unit; and~~

~~(vi)~~ a communication device co-located with the sensor unit and the recorder device configured to provide ~~for providing~~ direct wireless bi-directional communication with the central controller; and

c) a second memory in the central controller configured to store a location parameter associated with the sensor unit.

62. (currently amended) A system according to claim 61 further comprising an energy source configured to provide ~~for providing~~ the seismic energy in the earth.

63. (currently amended) A system according to claim 61, wherein the communication device includes a two-way wireless transceiver configured to provide ~~for~~ wireless communication with the central controller.

Claims 64-68 are cancelled.

Claims 69-71 are cancelled.

72. (previously presented) The apparatus according to claim 1 wherein the acquisition unit is configured to receive the location parameter entered by a field crew.

73. (previously presented) The apparatus according to claim 72 further comprising a GPS receiver, wherein the field crew uses the GPS to determine the location parameter.

74. (previously presented) The apparatus according to claim 72 wherein the location parameter is a longitude and a latitude of the sensor unit.

75. (previously presented) The apparatus according to claim 74 wherein the location parameter for the sensor unit further includes one of (i) an azimuth and (ii) an inclination.

76. (currently amended) The system ~~apparatus~~ according to claim 61 wherein the central controller is configured to receive ~~receives~~ a system parameter relating to the apparatus, the system parameter being an adjusted location parameter.

77. (currently amended) The system ~~apparatus~~ according to claim 76 wherein the adjusted location parameter is relative to a predetermined location spread.

78. (currently amended) The system ~~apparatus~~ according to claim 61 further comprising at least a seismic data processor configured to be programmed to process the location parameter with the acquired seismic data.

79. (currently amended) The system ~~apparatus~~ according to claim 61 further comprising at least a characterization processor configured to be programmed to characterize the subsurface formation using the acquired seismic data.